

ABSTRACT OF THE DISCLOSURE

There is provided a method of performing a surface treatment, such as coating,
5 denaturation, modification and etching, on a surface of a substrate. The method
comprises the steps of bringing a surface treatment gas into contact with a surface of a
substrate, and irradiating the surface of the substrate with a fast particle beam to
enhance an activity of the surface and/or the surface treatment gas, thereby facilitating
a reaction between the surface and the gas. The fast particle beam may be selected
10 from a group consisting of an electron beam, a charged particle beam, an atomic beam
and molecular beam. For example, during a coating operation, chemical deposition of
predetermined component elements of the gas onto the surface is effected and a
predetermined portion of the surface of the substrate is irradiated with a particle beam
to form a coating layer on the predetermined portion.

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